

Claims

What is claimed is:

1. A method for controlling the power of a motor, comprising the steps of:
 - (a) applying power to a spindle motor to engage a start-up sequence;
 - (b) monitoring the amount of current applied to the spindle motor during the start-up sequence;
 - (c) obtaining a control voltage proportional to the motor current; and
 - (d) disabling the start-up sequence if the control voltage exceeds a predetermined voltage threshold.
2. The method of claim 1 wherein the predetermined voltage threshold is obtained from a digital-to-analog converter.
3. The method of claim 2 wherein the predetermined voltage threshold corresponds to a preprogrammed start-up disc profile.
4. The method of claim 1 wherein step (c) further comprises obtaining the control voltage by integrating a voltage across a current sensing resistor.
5. The method of claim 1 wherein step (a) further comprises the steps of:
 - (a)(i) enabling the calibrating of the predetermined voltage threshold.

6. The method of claim 5, wherein step (a)(i) further comprises the steps of:

(a)(ii) applying a signal from a digital-to-analog converter (DAC) to the input of a comparator;

(a)(iii) applying a finite specific reference signal to simulate the monitoring of the current applied to the spindle motor; and

(a)(iv) adjusting the signal from the DAC to compensate for offsets of the circuitry.

7. The method of claim 1 further comprising the step of:

(e) waiting a fixed period of time;

(f) re-enabling power to the motor; and

(g) repeating steps (b) - (g).

8. A method for controlling the current drawn from a power supply in a computer system, comprising the steps of:

(a) applying power to a drive spindle motor to engage a start-up sequence; and

(b) monitoring the amount of current applied to the spindle motor during the start-up sequence.

(c) obtaining a control voltage proportional to the motor voltage;

(d) disabling the start-up sequence if the control voltage exceeds a predetermined voltage threshold.

9. The method of claim 8 wherein the predetermined voltage threshold is obtained from a digital-to-analog converter.

10. The method of claim 9 wherein the predetermined voltage threshold corresponds to a preprogrammed start-up disc profile.
11. The method of claim 8 wherein step (c) further comprises obtaining the control voltage by integrating a voltage across a current sensing resistor.
12. The method of claim 8 further comprising the step of:
 - (e) waiting a fixed period of time;
 - (f) re-enabling power to the motor; and
 - (g) repeating steps (b) - (g).
13. A data storage device , comprising:
 - at least one spindle motor;
 - a power supply electrically connected to the spindle motor; and
 - a spindle motor controller, wherein the spindle motor controller measures and limits an amount of power from the power supply that is utilized by the spindle motor during a spindle motor start-up sequence.
14. The data storage device of claim 13 wherein the spindle motor controller further comprises:
 - a driver control function programmed into the motor controller which disables a spindle motor driver for a fixed period of time.
15. The data storage device of claim 13 further consisting of:
 - a data storage device controller, operably connected to the spindle motor controller, wherein the data storage device controller can initiate or deactivate the spindle motor start-up sequence.

16. The data storage device of claim 14 wherein the driver control function is enabled when a signal proportional to a current applied to the spindle motor exceeds a predetermined threshold.
17. The data storage device of claim 16 wherein the predetermined threshold is a programmable voltage from a digital-to-analog converter.
18. A data storage device, comprising:
 - at least one spindle motor;
 - a power supply electrically connected to the spindle motor; and
 - means for monitoring power applied to the spindle motor during a start-up sequence.
19. The data storage device of claim 18, wherein the means for monitoring power further comprises:
 - a driver control function for disabling the motor drivers for a fixed period of time.
20. The data storage device of claim 19, wherein the driver control function further comprises:
 - a disable feature which initiates when a signal proportional to the spindle motor voltage exceeds a predetermined threshold.
21. A method for controlling the power of a motor, comprising the steps of:
 - (a) applying power to a motor to engage a run sequence; and
 - (b) monitoring the amount of current applied to the motor during the run sequence;
 - (c) obtaining a control voltage proportional to the motor current;

- (d) disabling the run sequence if the control voltage exceeds a predetermined voltage threshold.

22. The method of claim 21 wherein the predetermined voltage threshold is obtained from a digital-to-analog converter.

23. The method of claim 22 wherein the predetermined voltage threshold corresponds to a preprogrammed run disc profile.

24. The method of claim 21 wherein step (c) further comprises obtaining the control voltage by integrating a voltage across a current sensing resistor.

25. The method of claim 21 further comprising the step of:

- (e) waiting a fixed period of time;
- (f) re-enabling power to the motor; and
- (g) repeating steps (b) - (g).

26. A data storage device , comprising:

at least one spindle motor;
a power supply electrically connected to the spindle motor; and
a spindle motor controller, wherein the spindle motor controller measures and limits an amount of power from the power supply that is utilized by the spindle motor during a spindle motor run sequence.

27. The data storage device of claim 26 wherein the spindle motor controller further comprises:

a driver control function programmed into the motor controller which disables a spindle motor driver for a fixed period of time.

28. The data storage device of claim 26 further consisting of:
a data storage device controller, operably connected to the spindle
motor controller, wherein the data storage device controller can initiate
or deactivate the spindle motor run sequence.
29. The data storage device of claim 27 wherein the driver control function
is enabled when a signal proportional to a current applied to the spindle
motor exceeds a predetermined threshold.
30. The data storage device of claim 29 wherein the predetermined
threshold is a programmable voltage from a digital-to-analog converter.